

Appl. No. 09/587,542
Amdt. dated February 21, 2006
Amendment under 37 CFR 1.116 Expedited Procedure
Examining Group 2143

PATENT

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (previously presented) In a network supporting packet multicasting from a sender into the network, where hosts join and leave a multicast group by sending join and leave messages, respectively, to an access device in the network, an improvement comprising:

a plurality of layers, wherein a layer is a logical channel that carries packets for the multicast group;

logic for distributing multicast traffic from the sender over the plurality of layers according to a sending rate associated with each of the plurality of layers;

logic for accepting join and leave messages at the access device from the hosts, wherein the join and leave messages are associated with one or more layers of the plurality of layers; and

logic for reducing the sending rate of at least one of the plurality of layers over time independent of receiver feedback.

2. (original) The network of claim 1 further comprising logic for raising the sending rate of an unused layer.

3. (previously presented) In a network supporting packet multicasting from a sender into the network, where hosts join and leave a multicast group by sending join and leave messages, respectively, to an access device in the network, a method comprising the steps of:

accepting multicast join messages at the access device, wherein a join message indicates that a host beyond an interface to the access device requests membership in a layer, where a layer is a logical channel over which packets are multicast to hosts that are members of a multicast group for the layer;

Appl. No. 09/587,542
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Examining Group 2143

PATENT

transmitting multicast packets to a plurality of layers, wherein multicast packets are transmitted by the sender on a given layer at a rate approximately equal to a sending rate associated with the layer;
accepting multicast leave messages at an access device from hosts, wherein a leave message indicates that a host requests removal from a layer indicated in the leave message; and reducing the sending rates for each of the layers over time independent of receiver feedback, thereby reducing a reception rate of a host that is joined to a fixed set of layers.

4. (previously presented) The method of claim 3, further comprising a step of offsetting a reduced reception rate at a host due to a reduced sending rate for each of the layers by the host joining one or more additional layers, if a reception rate at the host is to be maintained.

5. (previously presented) The method of claim 3, wherein the step of reducing the sending rates includes reducing the sending rate for a selected one of the layers to zero.

6. (previously presented) The method of claim 5, further comprising a step of increasing the sending rate for the selected one of the layers after an idle period has elapsed.

7. (previously presented) The method of claim 6, wherein the idle period is longer than a leave latency associated with the access device responding to a leave message.

8. (previously presented) In a network supporting packet multicasting from a sender into the network, wherein hosts join and leave a multicast layer by sending join and leave messages, respectively, to an access device in the network, a method comprising the steps of:

transmitting multicast packets to a plurality of dynamic layers at a rate approximately equal to an aggregate sending rate;
reducing a sending rate for a first one of the plurality of dynamic layers over time independent of receiver feedback; and

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Examining Group 2143

PATENT

concurrently with the step of reducing, increasing a sending rate of at least one other of the plurality of dynamic layers, thereby maintaining the aggregate sending rate for the plurality of dynamic layers.

9. (previously presented) The method of claim 8, wherein a host connected to the network is able to maintain a reception rate over time by joining the at least one other dynamic layer.

10. (previously presented) The improvement of claim 1, wherein the logic for accepting join and leave messages receives join messages from hosts attempting to maintain a reception rate at the host whereby the host joins one or more additional layers to maintain the reception rate and offset reduced reception rates at a host due to a reduced sending rate for each of the layers.

11. (previously presented) The improvement of claim 1, wherein the logic for reducing the sending rate operates to reduce the sending rate of at least one of the plurality of layers independent of congestion.

12. (previously presented) The improvement of claim 1, wherein the logic for accepting join and leave messages receives join messages from hosts attempting to maintain a reception rate at the host whereby the host joins one or more additional layers to maintain the reception rate and offset reduced reception rates at a host due to a reduced sending rate for each of the layers and wherein the logic for reducing the sending rate operates to reduce the sending rate of at least one of the plurality of layers independent of congestion.